

## Unit 1 Review

In addition to knowing vocab definitions, be sure you can apply them to understand the following:

### Ch 2

- Difference between elements vs compounds vs molecules (and examples of each)
- Atomic Structure
  - How do you determine number of p, n, e in an atom given atomic and mass numbers?
  - How does this change in an isotope?
  - How do you determine valence and chemical behavior (stability/reactivity/formation of anion vs cation) of an atom? Relation to position in periodic table?
  - Energy absorption vs loss when electron changes shells
- Chemical Bonds
  - Difference between ionic vs covalent; polar covalent vs nonpolar covalent (electronegativity)
  - Strong vs weak (Hydrogen bonds vs Van der Waals)
- Water's Properties
  - WHY they occur (polar, hydrogen bonds); WHY each property is important to living things
    - Cohesion vs adhesion; surface tension
    - High specific heat, evaporative cooling
    - Ice vs water
    - Versatile solvent; hydrophilic vs hydrophobic
- pH
  - Acid vs Base (pH value, effect on  $H^+$  vs  $OH^-$  concentration, examples of strong vs weak)
  - How do buffers work?

### Ch 3

- Carbon: Why is it so versatile?
- Dehydration reaction vs hydrolysis
  - Does it build a polymer or break down into monomers? Is water removed or added?
- Monomers vs Polymers
  - Which monomers make up each polymer?
  - Examples of each kind of monomer and polymer
- Name of specific covalent bond in each polymer (glycosidic vs peptide vs phosphodiester)
- Functions of each macromolecule
- Carbohydrates
  - Examples of mono vs di vs polysaccharides
  - Similarities and differences between starch and cellulose (structure, function, digestion of and why)
- Lipids
  - Saturated vs unsaturated fats
  - Structure of phospholipids and attraction to/repulsion of water
- Proteins
  - Function of enzymes
  - Components of amino acids (functional groups, etc)
  - 4 levels of protein structure (primary, secondary, tertiary, quaternary)
  - Cause and result of denaturation
- Nucleic Acids
  - Differences between DNA and RNA
  - Components of nucleotides
  - Differences between and examples of purines vs pyrimidines
  - Base pairing rules (% of each base, 5' to 3' pairing)